

E3 ENTRANCE

Mapping and analysis of incentives for energy-efficiency, on-situ RES, flexibility, and grid interaction



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2 Executive Summary

The WP 7.1 Status Report presents a comprehensive analysis of incentives for retrofitting and energy efficiency measures across multiple European countries within the framework of the EU project ENTRANCE. The project, with ReMoni as one of the partners, aims to accelerate the transition to smart-grid-ready and decarbonized buildings by integrating energy efficiency, flexibility, on-site renewables, user empowerment, and interoperability between buildings and energy grids.

Background and Objectives:

Buildings account for approximately 40% of the EU's total energy use and 36% of greenhouse gas emissions, making the sector a cornerstone of Europe's climate and energy policies. The ENTRANCE project seeks to enable buildings to play an active role in the energy system, supporting the implementation of advanced control strategies, smart management systems, and the integration of renewable energy sources. Work Package 7 focuses on ensuring the sustainability of project outcomes through robust business cases, market research, and stakeholder engagement, with Task 7.1 dedicated to analyzing incentives for retrofitting.

Scope and Methodology:

This report synthesizes data collected via structured questionnaires from project partners in Denmark, Estonia, Italy, Poland, Norway and Sweden. The analysis covers national and regional policies, available incentives, effectiveness assessments, barriers, and recommendations. Quantitative and qualitative data are presented through tables and case studies to provide a comparative perspective across countries.

Key Findings:

- **Policy Landscape:** All participating countries have established ambitious national strategies and regulatory frameworks to promote energy efficiency in buildings, aligned with EU directives such as the Energy Performance of Buildings Directive (EPBD).
- **Incentive Schemes:** A diverse range of incentives exists, including grants, tax credits, subsidies, and market-based mechanisms. These target homeowners, businesses, public institutions, and, in some cases, energy-poor households.
- **Effectiveness:** Incentives have driven significant improvements in building energy performance, with measurable reductions in energy use and emissions. However, the depth and pace of retrofits vary, and challenges remain in achieving long-term climate targets.
- **Barriers:** Common barriers include complex administrative procedures, high upfront costs, limited technical capacity, and regulatory uncertainty. Social and regional disparities also affect access and uptake.
- **Best Practices:** Innovative approaches such as bundled "one-stop-shop" renovation services, dynamic tariffs, and community-driven projects have demonstrated potential for broader replication.



Impact and Recommendations:

The analysis underscores the critical role of well-designed incentives in accelerating the energy transition in the building sector. To maximize impact, the report recommends simplifying application processes, enhancing technical support, fostering stable regulatory environments, and promoting integrated solutions that combine energy efficiency with flexibility and user empowerment.

Conclusion:

The findings of this report provide actionable insights for policymakers, stakeholders, and project partners. By leveraging best practices and addressing identified barriers, the ENTRANCE project and its partners can contribute meaningfully to the EU's climate and energy objectives, ensuring the sustainability and scalability of innovative solutions for smart, decarbonized buildings.



3 Project Description

3.1 Background and Context

The energy and building sector are central to Europe's environmental and energy strategies, as buildings are responsible for approximately 40% of the European Union's total energy consumption and 36% of its greenhouse gas emissions. In the context of the EU's ambitious climate and energy targets, the building sector is recognized as a cornerstone for achieving significant reductions in energy use and emissions.

The ongoing energy transition in Europe places a strong emphasis on the modernization of the building stock. Buildings offer substantial potential for cost-effective energy savings through the adoption of advanced control strategies, smart management systems, and integration with renewable energy sources. These improvements not only enhance energy efficiency and flexibility but also contribute to improved comfort, productivity, and health for building users.

The European Green Deal and related directives, such as the Energy Performance of Buildings Directive (EPBD), set out clear pathways for decarbonizing the building sector. Achieving these objectives requires improving the interoperability of buildings with energy carriers and non-energy services, enabling buildings to play an active role in ensuring the reliability, resilience, and sustainability of the energy system. This is particularly important in the face of evolving challenges such as climate change, resource constraints, cybersecurity threats, and geopolitical uncertainties.

The ENTRANCE project aims to create smart-grid-ready, decarbonized buildings. It does this by integrating energy efficiency, flexibility, on-site renewables, user empowerment, and interoperability with district heating and electricity grids. By developing and demonstrating innovative solutions, ENTRANCE seeks to promote the active participation of buildings in the energy system and market, ensuring user comfort and empowerment while creating value for economic actors across the energy landscape.

Work Package 7, and specifically Task 7.1, addresses the sustainability of project outcomes by focusing on robust business cases, strategic exploitation, market research, and stakeholder engagement. The analysis of incentives for retrofitting and energy efficiency is a critical component in supporting the widespread adoption of these solutions and achieving the EU's long-term climate and energy goals.

3.2 Project Objectives

The ENTRANCE project is designed to address the urgent need for decarbonization and modernization of Europe's building stock, in alignment with the European Union's climate and energy ambitions. The project's overarching objectives are as follows:



- **Enable Smart-Grid-Ready and Decarbonized Buildings:**
Integrate advanced energy efficiency measures, flexibility solutions, on-site renewable energy sources, and smart management systems to transform buildings into active participants in the energy system.
- **Promote Interoperability and Integration:**
Foster seamless interoperability between buildings and district heating and electricity grids, enabling buildings to interact dynamically with energy carriers and non-energy services.
- **Empower End-Users:**
Ensure that building users are at the center of the energy transition by providing tools and solutions that enhance comfort, productivity, health, and engagement in energy management.
- **Accelerate the Adoption of Renewable Energy:**
Facilitate the cost-effective integration of on-site and nearby renewable energy sources, supporting the EU's goals for energy independence and sustainability.
- **Support Market Transformation:**
Develop and demonstrate business models and technical solutions that create value for economic actors in the energy landscape, including building owners, service providers, and utilities.
- **Ensure Project Sustainability and Exploitation:**
Through Work Package 7, and specifically Task 7.1, ensure that project outcomes are sustainable by building robust business cases, conducting strategic market research, and engaging stakeholders across the value chain.
- **Advance Policy and Incentive Analysis:**
Analyze and map national and regional policies, incentives, and barriers related to retrofitting and energy efficiency, providing actionable insights to support the widespread adoption of innovative solutions.

By achieving these objectives, the ENTRANCE project aims to contribute significantly to the EU's climate and energy targets, demonstrating scalable pathways for the transformation of the building sector and the broader energy system.

3.3 Consortium and Stakeholders

The ENTRANCE project brings together a multidisciplinary consortium of leading organizations from across Europe, each contributing unique expertise and perspectives to address the challenges of building decarbonization and energy system integration. The consortium includes universities, research institutes, technology providers, industry partners, and public sector organizations, ensuring a comprehensive approach to innovation, demonstration, and market uptake.

Key Consortium Members:



- ReMoni A/S (Denmark): Project partner and contributor to Work Package 7, specializing in smart energy monitoring and building management solutions.
- Aalborg University (Denmark): Academic partner contributing to policy analysis, barriers/recommendations and data triangulation for Denmark.
- Tallinn University of Technology (Estonia): Academic partner providing research and analysis on national policies and incentive effectiveness.
- Politecnico di Torino (Italy) & EURIX: Experts in energy retrofitting strategies, policy analysis, and demonstration activities.
- Lublin University of Technology and Polish Organization for Heat Pump Development (Poland): Contributor to national policy mapping, incentive analysis, and technical evaluation.
- CIT Renergy AB (Sweden): CIT Renergy AB is a key partner in the ENTRANCE consortium, contributing extensive expertise in the economic evaluation of energy performance improvements.
- Norwegian University of Science and Technology (Norway): Specialist in energy efficiency, retrofitting, and stakeholder engagement.
- Additional partners: Including regional authorities, technology companies, and energy agencies, supporting pilot projects, data collection, and dissemination.

Stakeholder Engagement: The project actively involves a broad range of stakeholders to ensure relevance, impact, and scalability of its outcomes. These stakeholders include:

1. Building owners and managers: Residential, commercial, and public sector representatives who are the primary beneficiaries and implementers of retrofitting measures.
2. Policy makers and regulators: National and regional authorities responsible for designing and implementing energy and climate policies.
3. Technology providers and service companies: Firms offering innovative solutions for energy monitoring, control, and retrofitting.
4. Financial institutions: Organizations supporting investment and financing energy efficiency projects.
5. End-users and communities: Building occupants and local communities whose engagement and empowerment are critical for successful adoption.

Collaboration and Knowledge Sharing: The consortium fosters close collaboration through regular meetings, workshops, and knowledge exchange activities. This collaborative approach ensures that best practices, lessons learned, and innovative solutions are shared across countries and sectors, maximizing the project's contribution to the EU's climate and energy objectives.

3.4 Work Package 7 Overview

Work Package 7 (WP7) of the ENTRANCE project is dedicated to ensuring the long-term sustainability and exploitation of project outcomes. Recognizing that technical innovation alone is not sufficient for widespread adoption, WP7 focuses on developing robust business cases,



strategic exploitation plans, and effective stakeholder engagement strategies to maximize the impact and scalability of the project's solutions.

Key Objectives of Work Package 7:

- **Sustainability of Results:**
Guarantee that the solutions developed and demonstrated within ENTRANCE remain viable and impactful beyond the project's duration, supporting the EU's long-term climate and energy goals.
- **Business Case Development:**
Analyze and validate business models that support the integration of energy efficiency, flexibility, and renewable energy solutions in buildings, ensuring economic viability for all stakeholders.
- **Market Research and Incentive Analysis:**
Conduct comprehensive market research to identify opportunities, barriers, and drivers for retrofitting and smart energy solutions. Special emphasis is placed on mapping and evaluating national and regional incentives, as well as policy frameworks that influence adoption.
- **Stakeholder Engagement:**
Engage a wide range of stakeholders—including building owners, policymakers, technology providers, and end-users—to ensure that solutions are tailored to real-world needs and that knowledge is effectively transferred across sectors and regions.
- **Strategic Exploitation:**
Develop strategies for the exploitation and replication of project results, including recommendations for policy, market mechanisms, and business practices that can accelerate the energy transition in the building sector.

3.5 Task 7.1 – Access to incentives for retrofitting, energy-efficiency measures, and improvement

The subject of this report is the analysis of incentives for retrofitting and energy efficiency. It aims to:

- Map and compare incentive schemes across participating countries.
- Assess the effectiveness of these incentives in driving building renovations and energy upgrades.
- Identify barriers and propose solutions to enhance the accessibility and impact of incentive programs.
- Provide actionable insights to inform both project partners and policymakers at the European level.



Through these activities, the work package ensures that the ENTRANCE project not only delivers technical innovation but also creates the necessary conditions for sustainable market transformation and policy advancement.



4 Methodology

4.1 Data Collection Approach

The data collection for this status report was designed to ensure a comprehensive and comparable analysis of incentives for retrofitting and energy efficiency across multiple European countries participating in the ENTRANCE project. The approach combined structured qualitative and quantitative methods, leveraging the expertise and local knowledge of project partners.

Key elements of the data collection approach:

- **Structured Questionnaires:**
A standardized questionnaire was developed and distributed to project partners in Denmark, Estonia, Italy, Poland, Norway and Sweden. The questionnaire was designed to capture detailed information on national and regional policies, available incentives, effectiveness assessments, barriers, and recommendations related to retrofitting and energy efficiency in buildings.
- **Country-Specific Inputs:**
Each partner organization was responsible for collecting and synthesizing data relevant to their country. This included policy documents, statistical data, case studies, and expert assessments. The use of a common template ensured consistency and facilitated cross-country comparison.
- **Document Review:**
In addition to the questionnaire responses, relevant national strategies, legislative documents, and official reports were reviewed to validate and supplement the information provided by partners. This helped ensure the accuracy and completeness of the data.
- **Stakeholder Engagement:**
Where possible, input was gathered from key stakeholders such as policymakers, building owners, technology providers, and end-users. This provided additional context and practical insights into the implementation and impact of incentive schemes.
- **Data Validation:**
All collected data were reviewed for consistency and accuracy. Discrepancies or gaps were clarified through follow-up communication with the respective partners.

This multi-source, collaborative approach enabled the project team to assemble a robust dataset, forming the basis for the subsequent analysis of incentive effectiveness, barriers, and best practices across the participating countries.



4.2 Questionnaire Design

To ensure a systematic and comparable collection of information across all participating countries, a structured questionnaire was developed as the primary data collection instrument for Task 7.1. The design of the questionnaire was guided by the objectives of the ENTRANCE project and the specific requirements of Work Package 7, focusing on the analysis of incentives for retrofitting and energy efficiency in buildings.

Key features of the questionnaire design:

- **Comprehensive Coverage:**
The questionnaire was structured to capture a wide range of relevant topics, including national and regional policies, available incentives, effectiveness assessments, barriers to implementation, and recommendations for improvement.
- **Sectional Organization:**
The questionnaire was divided into clear sections to facilitate targeted responses:
 - General Information (country, organization, contact)
 - National Policies and Recent Updates
 - Available Incentives (types, beneficiaries, regional/local schemes)
 - Effectiveness and Data (impact, statistics, case studies, monitoring mechanisms)
 - Barriers and Recommendations
 - Energy Flexibility and Demand Response (policies, markets, stakeholders, pilot programs, barriers)
- **Standardization for Comparability:**
Questions were formulated in a standardized manner to enable direct comparison of responses across countries. This included both closed and open-ended questions to gather quantitative data and qualitative insights.
- **Clarity and Accessibility:**
The questionnaire was designed to be clear and accessible to respondents with diverse backgrounds, ensuring that all relevant information could be captured efficiently and accurately.
- **Iterative Refinement:**
The draft questionnaire was reviewed and refined in consultation with project partners to ensure relevance, completeness, and clarity. Feedback from initial respondents was incorporated to improve the final version.
- **Digital Distribution and Submission:**
The questionnaire was distributed electronically to all country partners, allowing for efficient data collection and easy collation of responses.

This carefully structured approach to questionnaire design ensured that the data collected was robust, comprehensive, and suitable for in-depth analysis and cross-country comparison within the ENTRANCE project.



4.3 Analytical Framework

The analytical framework for this report was designed to systematically evaluate and compare the landscape of incentives for retrofitting and energy efficiency across the participating countries. The framework integrates both qualitative and quantitative analysis, ensuring that findings are robust, comparable, and actionable for stakeholders and policymakers.

Key components of the analytical framework:

- **Thematic Analysis:**
Responses from the structured questionnaires were categorized according to key themes: policy context, incentive types, effectiveness, barriers, and recommendations. This thematic approach enabled the identification of common patterns, unique national features, and emerging best practices.
- **Comparative Assessment:**
Standardized data enabled direct comparison across countries. Comparative tables and matrices were developed to highlight similarities and differences in policy approaches, incentive mechanisms, and outcomes.
- **Quantitative Data Analysis:**
Where available, quantitative data (e.g., number of retrofitted buildings, investment volumes, energy savings, emissions reductions) were extracted and analyzed. Descriptive statistics were used to summarize and visualize key trends, supporting evidence-based conclusions.
- **Case Study Integration:**
Notable case studies and pilot projects identified in the questionnaires were incorporated to illustrate practical applications, innovative approaches, and real-world impacts of incentive schemes.
- **Barrier and Solution Mapping:**
Reported barriers to accessing or implementing incentives were systematically mapped and categorized (e.g., administrative, financial, technical, social). Corresponding recommendations and solutions were analyzed to identify actionable strategies for improvement.
- **Cross-Validation:**
Data from questionnaires were cross-validated with official documents, national reports, and, where possible, stakeholder feedback to ensure accuracy and reliability.
- **Visualization:**
Graphs, charts, and summary tables were developed to present findings in a clear and accessible manner, facilitating understanding and supporting decision-making.

This analytical framework provided a structured basis for synthesizing diverse data sources, enabling the report to deliver meaningful insights and policy-relevant recommendations for advancing energy efficiency and retrofitting in the European building sector.



4.4 Limitations

While the methodology adopted for this report ensures a robust and comparative analysis, several limitations should be acknowledged:

- **Variability in Data Availability:**
The availability and granularity of data on incentives, retrofitting activities, and energy efficiency outcomes vary significantly between countries. In some cases, quantitative data (e.g., investment volumes, number of retrofitted buildings, or emissions reductions) were limited or not directly comparable due to differences in national reporting standards.
- **Self-Reported Information:**
Much of the data was collected through self-reported questionnaires completed by project partners. While partners are experts in their respective contexts, responses may reflect subjective interpretations or incomplete knowledge of all national and regional programs.
- **Language and Terminology Differences:**
Differences in language, terminology, and policy frameworks across countries may have led to variations in how questions were understood and answered, despite efforts to standardize the questionnaire.
- **Time Constraints and Policy Changes:**
The policy landscape for energy efficiency and retrofitting is dynamic, with frequent updates to national strategies, incentive schemes, and regulatory frameworks. The data presented in this report reflects the situation at the time of collection and may not capture the most recent developments.
- **Limited Stakeholder Perspectives:**
While the report incorporates input from key stakeholders, the primary focus was on project partners and available documentation. Broader engagement with end-users, local authorities, and market actors could provide additional insights into the practical challenges and opportunities associated with incentive uptake.
- **Comparability of Effectiveness Assessments:**
Assessing the effectiveness of incentives is inherently complex, as outcomes depend on a range of contextual factors (e.g., building stock characteristics, market maturity, social acceptance). Direct comparison between countries should therefore be interpreted with caution.

Despite these limitations, the methodology provides a solid foundation for cross-country analysis and the identification of best practices and policy recommendations. Future work may address these constraints by expanding data sources, increasing stakeholder engagement, and incorporating longitudinal analysis as new data becomes available.



5 Results

5.1 Overview of National Policies

5.1.1 Denmark

Denmark has established a comprehensive and ambitious policy framework to drive energy efficiency and decarbonization in the building sector, closely aligned with EU directives and climate targets.

Key National Policies and Strategies:

- **Climate Act (2020):**
Denmark's legally binding Climate Act sets a target of a 70% reduction in greenhouse gas (GHG) emissions by 2030 (compared to 1990 levels) and climate neutrality by 2050. The Act is regularly updated, with the government reaffirming these targets in 2024–2025.
- **Building Code (BR18):**
The Danish building code (BR18) incorporates near-zero energy building (NZEB) standards for both new constructions and major renovations. It sets minimum requirements for components such as windows and ventilation systems with heat recovery. Energy certificates (Energimærkning) are mandatory for all buildings at the point of sale or lease, and for public buildings, with a validity of 10 years and an included upgrade plan.
- **Energy Renovation Strategy:**
Denmark's energy renovation strategy is the largest and most comprehensive to date, aiming to reduce heat consumption in existing buildings by 35% before 2050. The strategy is a cornerstone of the country's transition to an energy-efficient society.
- **Road Map for Energy Efficiency:**
This plan implements EU targets, requiring the annual renovation of at least 3% of public buildings, and sets out a trajectory for continuous improvement in building energy performance.
- **Sustainable Building Strategy:**
The national strategy for sustainable construction emphasizes life cycle CO₂ reduction and energy-efficient construction and renovation practices.
- **EU Directives Integration:**
Denmark has fully integrated the Energy Performance of Buildings Directive (EPBD) and the Energy Efficiency Directive (EED) into national law, driving minimum energy standards, renovation plans, and near-zero energy targets.

Recent Policy Updates:



- The revised EPBD enters into force in 2024 and must be transposed into Danish law by 2026.
- From July 2025, new buildings must meet stricter CO₂ thresholds (7.1 kg CO₂ per m² per year).

Barriers and Challenges:

- High upfront costs and long paybacks; administrative burden; limited technical capacity among owners/contractors; split incentives in co-ownerships hamper deep retrofits.

Innovative approaches:

- Nationwide time of use network tariffs nudge flexible consumption (EVs/heat pumps), and “one stop shop” renovation/advisory models simplify homeowner journeys.

Monitoring:

- Energy Performance Certificates (EPCs) and Danish Energy Agency statistics track progress.

Policy Impact:

These policies collectively create a robust regulatory environment that supports deep energy renovations, the adoption of advanced technologies, and the integration of renewable energy sources in the Danish building sector. The focus on both regulatory requirements and incentive mechanisms positions Denmark as a leader in building decarbonization within the EU.

5.1.2 Estonia

Estonia has developed a targeted policy framework to promote energy efficiency and retrofitting in the building sector, in line with EU directives and national sustainability goals.

Key National Policies and Strategies:

- **National Minimum Energy Efficiency Requirements:**
Estonia enforces minimum energy efficiency standards for both new and deeply renovated buildings. For renovations, these requirements apply when the renovation is considered major (i.e., the cost exceeds 25% of constructing a similar new building).
- **National Renovation Road Map:**
This strategic document outlines the needs, potential activities, and costs for building renovations up to 2050. While it provides a long-term vision, its direct influence on state budget allocations has been limited.
- **Implementation of EU Directives:**
Estonia has adopted requirements from the Energy Performance of Buildings



Directive (EPBD), including minimum energy performance standards (MEPS) and the transition to zero-emission buildings.

Recent Policy Updates:

- Policy changes are primarily driven by updates to the EPBD, such as the introduction of MEPS and zero-emission building requirements.

Incentive Schemes:

- **National Renovation Grants:**
Recurring grants are available for the renovation of old apartment buildings. Occasional grants are also provided for detached houses, installation of photovoltaic systems, and replacement of outdated heating systems. However, incentives for privately owned non-residential buildings are limited.
- **Local Incentives:**
Some municipalities offer local renovation grants, particularly for pilot projects. The eastern region of Estonia requires higher grant rates to motivate uptake.

Policy Impact and Effectiveness:

- Estonia has achieved notable success in meeting energy-related targets, particularly in residential renovations and improvements in indoor air quality. However, market-based energy renovations for non-residential buildings have been less successful.
- Monitoring and evaluation are supported by mandatory reporting of energy use for grant recipients and the national building registry, which provides public statistics on energy performance.

Barriers and Challenges:

- The predominance of private ownership complicates large-scale renovations.
- Extensive renovation requirements and project management complexity deter many owners, especially in rural and less developed areas where property values are low and access to financing is limited.

Innovative Approaches:

- Estonia has piloted renovations using prefabricated timber elements and introduced requirements for ventilation systems as a condition for receiving renovation grants.
- The country is also advancing energy flexibility through the introduction of quarter-hourly electricity pricing and active participation in mFRR and aFRR markets.

Summary:

Estonia's policy framework demonstrates a strong commitment to energy efficiency in buildings, with a focus on residential retrofits and alignment with EU standards. While significant progress has been made, especially in residential sectors, challenges remain in scaling up renovations for non-residential buildings and ensuring equitable access to incentives across regions.



5.1.3 Italy

Italy has established a comprehensive and multi-layered policy framework to promote energy efficiency and retrofitting in the building sector, closely aligned with EU directives and national climate objectives.

Key National Policies and Strategies:

- **Strategy for Energy Retrofitting of National Building Stock (STREPIN):**
This strategy sets renovation targets for 2030, 2040, and 2050, outlining supporting policy measures and financial resources needed to achieve them. It is regularly updated to align with evolving EU targets, such as the “Fit for 55” package.
- **National Energy and Climate Plan (NECP):**
The NECP coordinates national, regional, and local actions to reduce building energy use and greenhouse gas emissions. It sets annual targets for public sector retrofits and overall consumption reduction.
- **National Building Renovation Plan (NBRP):**
In line with the revised Energy Performance of Buildings Directive (EPBD), the NBRP establishes detailed measures for decarbonizing the building stock by 2050, with interim targets for 2030 and 2040.

Recent Policy Updates:

- Italy is currently updating its renovation strategy and NECP to reflect new EU requirements and climate ambitions.
- The NBRP is under preparation to comply with the latest EPBD requirements.

Incentive Schemes:

- **Ecobonus:**
Allows households and businesses to deduct a percentage of expenses for energy efficiency upgrades from their income taxes. Eligible interventions include insulation, HVAC replacement, renewable energy systems, and building envelope improvements.
- **Superbonus:**
Originally allowed tax deductions of up to 110% for energy efficiency and seismic retrofits, including insulation, renewable energy systems, and building automation. The deduction rate has been gradually reduced (90% in 2023, 70% in 2024, 65% in 2025).
- **White Certificates (Certificati Bianchi):**
A market-based mechanism that rewards energy savings achieved through efficiency interventions, converting them into tradable certificates.
- **Conto Termico 2.0:**
Provides direct grants for increasing energy efficiency and producing heat from renewable sources, targeting public administrations, businesses, and individuals.



- Fondo Nazionale per l'Efficienza Energetica: Supports energy efficiency interventions in companies and public administration, including buildings, plants, and production processes.
- Regional and Local Incentives: Many regions and municipalities offer additional grants, co-financing, and bonuses for retrofitting and energy efficiency upgrades, often supplementing national incentives.

Policy Impact and Effectiveness:

- Incentives have driven large volumes of retrofits and delivered substantial energy savings, with investments reaching hundreds of billions of euros.
- The Superbonus, Ecobonus, and related schemes have significantly increased renovation activity, especially in residential buildings.
- Monitoring and evaluation are conducted by ENEA (National Agency for New Technologies, Energy and Sustainable Economic Development), which publishes annual reports on interventions, investment volumes, and estimated energy savings.

Barriers and Challenges:

- Complex bureaucracy and frequent regulatory changes have created uncertainty and slowed project implementation.
- Limited technical capacity and a shortage of qualified professionals have led to delays and suboptimal outcomes.
- Building and urban planning restrictions, especially in historic areas, pose additional challenges.

Innovative Approaches:

- Italy has piloted community-driven renovation projects, hybrid renovation approaches combining envelope upgrades with advanced control systems, and the integration of building automation and control systems (BACS).
- The regulatory framework for Renewable Energy Communities (CER) provides direct incentives for shared energy consumption and flexibility.

Summary:

Italy's policy landscape demonstrates a strong commitment to energy efficiency and decarbonization in the building sector, supported by a diverse array of incentives and regulatory measures. While the impact has been significant, ongoing efforts to simplify procedures, stabilize regulations, and build technical capacity are essential to sustain progress and achieve long-term climate goals.

5.1.4 Poland

Poland has developed a robust policy and incentive framework to support the energy-efficient renovation of its building stock, in alignment with EU directives and national climate objectives.



The country faces a significant challenge due to the large proportion of older, energy-inefficient buildings, but has made substantial progress through targeted strategies and financial support mechanisms.

Key National Policies and Strategies:

- **Long-Term Building Renovation Strategy (LSRB):**
Adopted in 2022, the LSRB sets a roadmap for the renovation of Poland's building stock through 2050. The strategy aims to transform the national building stock into nearly zero-energy buildings, improve air quality, and create new jobs. It sets ambitious targets for both shallow and deep thermal modernization, with a planned average annual renovation rate of approximately 3.8%.
- **Poland's Energy Policy until 2040 (PEP2040):**
This policy focuses on energy security, economic competitiveness, energy efficiency, and environmental protection. It includes the development of smart electricity grids, increased use of renewable energy sources, and the widespread adoption of smart meters (targeting 80% household coverage by 2028).
- **National Building Renovation Plan (KPRB):**
In preparation to comply with the revised Energy Performance of Buildings Directive (EPBD), the KPRB will outline actions to achieve a highly energy-efficient, zero-emission, and decarbonized building stock by 2050.
- **Technical Regulations:**
Detailed regulations set minimum energy performance and thermal insulation requirements for new and renovated buildings, promoting the use of high-efficiency alternative systems and renewable energy sources.

Recent Policy Updates:

- The KPRB is under development, with the first draft to be submitted to the European Commission by the end of 2025.
- Ongoing updates to technical requirements and incentive programs reflect evolving EU and national priorities.

Incentive Schemes:

- **Clean Air Program (Czyste Powietrze):**
Provides financial support for homeowners to replace old heating systems and undertake thermal modernization projects. The program offers three levels of subsidy based on income, covering up to 100% of eligible costs for the lowest-income households.
- **Stop Smog Program:**
Targets energy-poor households, offering subsidies for deep thermal modernization and replacement of inefficient heating sources, with up to 100% cost coverage in certain municipalities.



- **Renovation Bonus (Premia Remontowa):**
Offers financial support to housing communities, cooperatives, and individuals for renovation projects, covering up to 50% of project costs.
- **Thermal Modernization Relief (Ulga Termomodernizacyjna):**
Allows taxpayers to deduct expenses for thermal modernization from their tax base, up to a specified limit.
- **Warm Apartment Program (Ciepłe Mieszkanie):**
Provides subsidies for the thermal modernization of apartments in multi-family buildings, including heating system upgrades and insulation.
- **My Electricity (Mój Prąd) and My Heat (Moje Ciepło):**
Support the installation of photovoltaic systems and heat pumps in single-family homes, promoting renewable energy adoption.

Policy Impact and Effectiveness:

- Incentive programs have led to significant improvements in building energy efficiency, with hundreds of thousands of buildings retrofitted and substantial reductions in energy consumption and emissions.
- The Clean Air program alone has improved the energy efficiency of over 450,000 buildings and reduced CO₂ emissions by more than 3 million tons per year (2019–2024).
- Monitoring and evaluation are conducted through mandatory reporting and national databases, though data consistency and centralization remain areas for improvement.

Barriers and Challenges:

- Complex application procedures and high indirect costs (e.g., documentation, energy audits) can deter participation.
- Limited budgets and administrative capacity restrict the number of projects funded each year.
- Technical and staffing shortages, as well as issues with contractor reliability, pose additional challenges.
- Social and regional disparities affect access to incentives, particularly in rural and low-income areas.

Innovative Approaches:

- Poland has implemented dynamic energy pricing and demand-side response (DSR) programs, enabling businesses to receive compensation for voluntary reductions in electricity consumption.
- The integration of renewable energy support with energy efficiency incentives (e.g., combining Clean Air grants with tax relief) enhances the attractiveness and impact of retrofitting measures.



Summary:

Poland's policy and incentive landscape demonstrate a strong commitment to improving building energy performance and reducing emissions. While significant progress has been made, ongoing efforts to simplify procedures, increase funding, and strengthen technical capacity are essential to achieving long-term renovation and decarbonization targets.

5.1.5 Norway

Norway's policy framework for building energy efficiency combines performance based regulation with targeted financial instruments and innovation programs. While overall governance is clear and stable, monitoring of realized savings beyond grant disbursement is still maturing, and private homeowners often find application processes demanding.

Key National Policies and Strategies

- **Technical Regulations for Construction Works (TEK17):**
Norway's primary building energy framework is the Regulations on technical requirements for construction works ("TEK17"), issued by the Norwegian Building Authority. TEK17 prescribes minimum energy performance for new buildings and for retrofits that trigger compliance. Energy related provisions were updated in 2022, refining envelopes and system requirements for both new build and major renovations.
- **Regular Code Revisions:**
The building code is revised periodically (typically every 5–10 years), with interim updates possible when national policy developments require earlier changes—most recently for the 2022 energy provisions under TEK17.

Incentive Schemes and Funding Channels

- **Enova (State Climate and Energy Fund):**
A state enterprise under the Ministry of Climate and Environment that provides grants/subsidies for:
 - residential measures (e.g., heating system upgrades, envelope improvements, control systems), and
 - commercial/real-estate programs (energy efficiency and flexibility).Enova also funds pilots and market development measures that enable demand flexibility.
- **SkatteFUNN (Tax Deduction for R&D):**
A rights-based tax deduction (generally 19% of eligible R&D costs) administered by the Research Council of Norway with the Tax Administration. Applicable to companies undertaking innovative projects, including those related to energy efficient buildings and retrofitting methods.
- **Innovation Norway:**
Provides advisory support, grants, and loans to startups and established companies



to commercialize solutions (e.g., building technologies, digital energy services) and to scale business models that can accelerate energy renovations.

- **Green Loans for Homeowners:**
Commercial banks (e.g., DNB, SpareBank 1) offer dedicated retrofit/“green” loans to private homeowners to finance envelope upgrades, heat pumps, and other efficiency measures.
- **Regional Development Funds:**
Each region can deploy regional business development funds to support collaboration, knowledge building and innovation that indirectly enable energy renovations (target groups include municipalities, public/private development actors, and industry associations).

Recent Policy and Program Updates

- The 2022 update to TEK17 strengthened energy provisions within the existing regulatory framework.
- Enova continues to refine program portfolios; several energy efficiency and flexibility programs have reporting series starting in 2024 (see “Effectiveness and Monitoring”).

Effectiveness and Monitoring

- **Enova Project Database & Publications:**
Enova maintains a public project database (project list) where funded projects and key attributes are reported. For several efficiency/flexibility programs, consolidated data series are currently available primarily from 2024 onward. Enova also publishes annual impact reports summarizing program uptake and indicative savings.
- **National Energy-Use Statistics:**
The Norwegian Water Resources and Energy Directorate (NVE) publishes official statistics. The referenced Energy Use 2023 report indicates declining final energy use in both households and commercial buildings, consistent with ongoing efficiency improvements.
- **Gaps in Longitudinal Tracking:**
Outside Enova’s portfolio, no unified, long-term monitoring system systematically tracks persistence of savings across measures; energy certificate schemes are expected to help over time, but comprehensive, comparable figures remain limited.

Barriers and Challenges

- **Usability of Schemes for Homeowners:**
Private house owners often perceive applications as complex and lack technical knowledge to specify appropriate measures.
- **Capacity and Transaction Costs for Commercial Actors:**
Building owners frequently rely on specialist consultants to navigate programs and develop viable projects, adding cost and capacity constraints.



- **Fragmented Follow-up Data:**
Limited end-to-end monitoring of measure performance and persistence makes it harder to benchmark cost-effectiveness across programs.

Innovative Approaches and Good Practices

- **Pilot (under Enova):**
A practical example of user centric guidance and piloting aimed at lowering entry barriers, improving decision quality, and accelerating uptake of effective measures.
- **Flexibility and System Services:**
Enova's support for flexibility in energy systems (e.g., enabling technologies, controls, and market access) is strengthening the role of buildings in providing system services alongside efficiency.

Summary:

Norway couples a clear performance-based building code (TEK17) with an active grant and innovation ecosystem (Enova, SkatteFUNN, Innovation Norway), complemented by green retail lending for homeowners and regional funds. This mix has supported measurable improvements in national energy use. To amplify impact, Norway's stakeholders consistently highlight the need to (i) simplify homeowner journeys, (ii) expand practical advisory support, and (iii) strengthen longitudinal monitoring of realized and persistent savings across the retrofit lifecycle.

5.1.6 Sweden

Sweden has established a forward-looking policy framework to promote energy efficiency and retrofitting in the building sector, closely aligned with EU directives and national climate goals.

Key National Policies and Strategies:

- **National climate policy framework:**
Sweden has a climate policy framework (adopted 2017) that consists of a climate act, climate targets and a climate policy council. The long-term target for Sweden is zero net emissions of greenhouse gases into the atmosphere by 2045 at the latest, and thereafter to achieve negative net emissions.
- **National Energy Efficiency Goal:**
By 2030, Sweden's energy use is to be 50 percent more efficient compared to 2005. A new qualitative national energy efficiency goal was proposed in November 2025, emphasizing sound energy management, peak load leveling, and increased capacity for demand-side flexibility and energy storage.
- **Implementation of EU Directives:**
Amendments to the Energy Performance Certificate Act were introduced in May 2025 as part of the EPBD 2024 recast. Additional changes to energy performance certificates and the classification system are under consideration, with new regulations planned to enter into force in July 2026.



- **Building Regulations:**
Boverket's (The Swedish National Board of Housing, Building and Planning) building regulations include a chapter on energy management which, inter alia, sets limits on primary specific energy use, average thermal transmittance and air leakage for new buildings and, to a degree, also for existing buildings undergoing alterations.
- **Technology procurement:**
The Swedish Energy Agency finances stakeholder networks (BeBo, BELOK, BeSmå, LÅGAN) that facilitate dialogue, pilot projects, and innovation procurement, regularly identifying barriers and recommendations for energy efficiency implementation. Innovation procurement is regarded as a key instrument for accelerating the development and market uptake of novel energy-efficient solutions.
- **Energy and climate advisory services:**
Municipal advisory services is another policy instrument that contributes to the implementation of Sweden's energy and climate targets. With the aim to enhance knowledge, offer guidance for decision-making, and contribute to measures that reduce energy use and climate impact, municipal energy and climate counsellors are tasked to provide citizens, small businesses, and organizations with free and technology-neutral advice. The advisory services are fully or partially funded through grants from the Swedish Energy Agency.
- 100% rollout of smart meters until January 2025¹.

Policy Updates in Development:

- A draft for revised regulations to implement parts of the revised Energy Efficiency Directive (EED) was recently under consultation, with new laws planned for July 2026
- The Swedish National Board of Housing, Building and Planning has proposed changes to the energy performance certificate system.
- .
- Ongoing negotiations for updating regulations on energy efficiency in buildings, including amendments to the national building code.

Incentive Schemes:

- **Tax Reduction for Green Technologies:**
Tax reductions are available for installation of grid-connected solar cell systems (15% of costs for material and labor), storage systems for self-generated electric energy (50%), and charging points for electric vehicles (50%) up to a deduction of 50,000 SEK per person and year.

¹ As stipulated in regulation EIFS 2025:1 (replacing EIFS 2013:1 and 2017:2): <https://ei.se/om-oss/publikationer/publikationer/foreskrifter-el/2025/foreskrift-eifs-20251>



- **ROT Tax Deduction for Home Improvement:**
The ROT deduction covers labor costs for repair, conversion, and extension works for homes older than 5 years. The standard rate is 30%, with a temporary increase to 50% for work performed and paid for between May and December 2025.
- **Subsidies for energy efficiency measures in small residential houses:**
 - Subsidies were available from July 2023 to June 2025 for energy efficiency measures in electrically heated (direct electric heating) or gas-heated houses, covering up to 50% of material costs (max SEK 30,000 for heating system measures and SEK 30,000 for building envelope measures).² The grant applied to small residential buildings, including detached houses, semi-detached houses and terraced houses (maximum two dwellings per building) with a value year that predates 1990. Grants were only available for building envelope measures when combined with one or more heating-system-related measures.
 - An extension of the support has been prepared³ and is under consultation until 8 June 2026. The proposed extension includes changes that aim to allow more homeowners to access the support and provide greater flexibility regarding measures than before.
- **Micro-production of Renewable Electricity:**
Tax reduction of 60 öre/kWh for surplus electricity fed into the grid (up to 30,000 kWh/year), introduced in 2015 and suspended by end of 2025.
- **Klimatklivet:**
Klimatklivet provides support for investments that reduce greenhouse gas emissions, targeting municipalities, regions, companies, and organizations (not private individuals). Eligible investments include heat exchangers, energy storage, heat pumps, ventilation systems, control equipment, and district heating connections.
- **Research Grants:**
Funding for research and development of products, methods, and services to facilitate energy renovation, primarily through the Swedish Energy Agency's programs.
- **Regional Incentives:**
SMEs in several regions can apply for a Sustainability Check, with up to SEK 500,000 in funding for external expertise to help develop sustainable products, services, or processes.

Beneficiaries:

- Tax reductions and subsidies: private individuals, homeowners
- Klimatklivet: municipalities, regions, companies, organizations

² https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/forordning-2023402-om-bidrag-for_sfs-2023-402/

³ <https://www.regeringen.se/contentassets/1080bc046a934f50bc54a1f1fbf24acd/ett-bidrag-for-effektiv-energianvandning-i-smahus.pdf>



- Research grants: companies, public actors, organizations, SMEs.

Monitoring:

- Energy Performance Certificates (EPCs) and National energy statistics show the progress of Energy performance and energy use in buildings.
- Financial subsidies are evaluated at the end of each period.
- The Swedish Energy Agency is tasked with investigating policy instrument design, with results due in March 2026.

Innovative Approaches:

- Stakeholder networks (BeBo, BELOK, BeSmå, LÅGAN) regularly pilot new technologies, methods, and services.
- Local flexibility markets (CoordiNet, Sthlmflex, Effekthandel Väst, Götene Flex) have been piloted and, in some cases, commercialized.

Summary:

Sweden's policy and incentive landscape demonstrate a strong commitment to energy efficiency and retrofitting, with a mix of tax reductions, subsidies, and support for innovation. While progress is evident, ongoing efforts to simplify access, increase market liquidity, and address regulatory barriers are essential for scaling up retrofits and flexibility in the building sector.

5.2 Incentive Schemes and Beneficiaries

This section synthesizes the incentive instruments identified across participating countries, mapping what support exists (grants, tax deductions/credits, market-based mechanisms, soft loans/tariffs) and who benefits (homeowners, multifamily associations/condominiums, businesses/ESCo, and public institutions). Findings are grounded in the country questionnaires and companion project files.

5.2.1 Denmark – incentive mix and target groups

Schemes: Denmark deploys a layered package of capital grants and market signals: the Bygningspuljen/Energirenovationspuljen (windows, ventilation, envelope upgrades), Varmepumpepuljen (heat pumps), and Erhvervspuljen (business grants for efficiency). Nationwide Time of Use network tariffs (Tarifmodel 3.0) shift distribution charges away from evening peaks, implicitly rewarding flexible consumption (e.g., EV/HP load shifting). EU directives (EPBD/EED) and the BR18 building code (NZEB aligned) anchor minimum performance in major renovations.

Beneficiaries: Homeowners, businesses/SMEs, and public institutions can access national schemes; municipalities draw on urban renewal funds for older stock. Tariffs apply broadly to grid users, enabling households and commercial buildings to lower bills by moving load off-peak.



5.2.2 Estonia – renovation grants with residential focus

Schemes: Estonia offers recurring national grants for renovation of older apartment buildings, plus occasional schemes for detached houses, PV, and boiler/stove replacement. Publicly owned nonresidential buildings see some support; privately owned nonresidential buildings currently have no dedicated incentives. Some municipalities co-found pilots; Eastern regions often need higher grant rates to stimulate uptake. Beneficiaries: Primarily homeowners (especially in multifamily stock) and, to a lesser extent, public owners via tailored schemes.

5.2.3 Italy – multilayered national incentives plus strong regional to pups

Schemes:

- Eco bonus (income tax deductions for envelope/HVAC/RES),
- Superbonus (originally 110%, stepping down to 90% (2023), 70% (2024), 65% (2025),
- White Certificates (tradable savings),
- Conto Termico 2.0 (direct grants for heat pumps/solar thermal/efficiency), and
- Fondo Nazionale per l'Efficienza Energetica (financial support for companies & PAs).

Many regions/municipalities add cofinancing (10–30% typical) or administrative facilitations, and Renewable Energy Communities (CER) provide direct remuneration for shared/self-consumed energy, creating a flexibility friendly business case. Beneficiaries: Households/condominiums, businesses/ESCOs, and public administrations; local “bandi” often target social housing and schools.

5.2.4 Poland – broad portfolio spanning equity, tax relief, and prosumer RES

Schemes:

- Clean Air (Czyste Powietrze) multitier grants for boiler replacement, insulation, windows, ventilation, PV; up to 100% for lowest incomes.
- Stop Smog deep retrofit grants for energy poor households (local cofinancing).
- Renovation Bonus (Premia Remon Towa) loan linked grants (partial repayment) for communities/coops/individuals.
- Thermal Modernization Tax Relief (up to PLN 53,000 deductible).
- Warm Apartment (Ciepłe Mieszkanie) for multifamily units.
- My Electricity (Mój Prąd) PV (+ storage/heat storage), My Heat (Moje Ciepło) for heat pumps.

Complementary Dynamic Pricing offers hourly tariffs; DSR programmed remunerate ≥ 1 MW industrial/commercial load reductions.

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Beneficiaries: Individuals (owners/co-owners), housing communities & cooperatives, municipalities (as programme applicants), and firms in DSR markets.

5.2.5 Norway – grants and innovation finance anchored by TEK17 code

Schemes:

- Enova grants/subsidies for residential and commercial efficiency & flexibility enabling measures.
- SkatteFUNN (≈19% tax deduction for eligible R&D);
- Innovation Norway (advisory, grants, loans to scale solutions).
- Green loans from DNB/SpareBank 1 for private retrofits.
- Regional development funds supporting collaboration/innovation.

Beneficiaries: Homeowners, companies/startups, and public bodies; consultants/ESCOs often help commercial owners navigate Enova schemes.

5.2.6 Sweden – tax incentives, targeted subsidies, and innovation support

Schemes: Sweden deploys a layered set of incentives to drive energy efficiency, retrofitting, and the adoption of renewable energy in buildings:

- Tax reduction for green technologies (15% tax reduction on PV installations and 50% on ebatteries and EV chargers)
- ROT tax deduction for home improvement
- Subsidy for energy efficiency in electrically and gas-heated small residential buildings.
- Tax reduction for micro-production of renewable electricity, available until January 2026.
- Klimatkivet: Support for investments that reduce greenhouse gas emissions.
- Funding for R&D of products, methods, and services to facilitate energy renovation, primarily through the Swedish Energy Agency's programs.
- Regional incentives like sustainability checks, for SMEs.

Beneficiaries:

- Tax reductions and subsidies: private individuals, homeowners.
- Klimatkivet: municipalities, regions, companies, organizations.
- Research grants: companies, public actors, organizations, SMEs.

5.2.7 Summary on alignment with ENTRANCE objectives

- Coverage across the value chain. All countries maintain capex-oriented instruments (grants/tax relief) that derisk envelope and system upgrades—crucial enablers for



- smart grid ready retrofits. Italy and Poland add market mechanisms (white certificates; DSR) that start to monetize actual performance, consistent with ENTRANCE's exploitation focus.
- Equity and depth. Poland's income tiered grants and Estonia's regional to pups target ability to pay gaps, Denmark's business grants and Norway's innovation finance support commercial adoption. However, deep retrofits remain challenging where administrative complexity and financing hurdles persist (notably IT & PL), underscoring WP7's business case and stakeholder engagement remit.
 - Flexibility signals. Denmark's Tarifmodel 3.0, Italy's CER premiums, Poland's dynamic pricing/DSR, and Enova's flexibility support collectively push buildings toward active system roles—a core ENTRANCE ambition.

5.3 Effectiveness of Incentives

The effectiveness of incentive schemes for retrofitting and energy efficiency varies across participating countries, reflecting differences in policy design, funding levels, market maturity, and administrative capacity. This section summarizes key outcomes, trends, and lessons learned from national data, case studies, and stakeholder feedback.

5.3.1 Denmark

- Impact: Incentives such as Bygningspuljen and Varmepumpepuljen have contributed to a steady increase in energy renovations, particularly in single-family homes. The introduction of time-of-use tariffs has encouraged flexible energy consumption, supporting grid stability and cost savings.
- Results: Denmark's energy renovation strategy has led to measurable reductions in heat consumption and improved building performance. Energy certificates and mandatory upgrade plans have increased awareness and uptake of efficiency measures.
- Challenges: Administrative complexity and limited funding windows can slow uptake. Deep renovations remain less common than incremental improvements.

5.3.2 Estonia

- Impact: National renovation grants have driven substantial improvements in multi-family residential buildings, with notable gains in energy savings and indoor air quality. The focus on prefabricated solutions and ventilation upgrades has accelerated market transformation.
- Results: Monitoring via the national building registry and mandatory reporting for grant recipients shows consistent progress toward national targets.



- Challenges:
Limited incentives for privately owned non-residential buildings and regional disparities in grant uptake. Complexity of renovation projects and financing barriers persist.

5.3.3 Italy

- Impact:
The Ecobonus and Superbonus schemes have generated a surge in renovation activity, with billions of euros invested and significant reductions in energy consumption and emissions. White Certificates have incentivized market-based savings.
- Results:
ENEA reports indicate hundreds of thousands of buildings retrofitted, with measurable improvements in energy performance and comfort.
- Challenges:
Bureaucratic hurdles, frequent regulatory changes, and technical capacity constraints have slowed implementation. The gradual reduction of Superbonus rates may affect future uptake.

5.3.4 Poland

- Impact:
Programs like Clean Air and Stop Smog have enabled deep retrofits for energy-poor households and improved air quality. Tax relief and grants have supported widespread adoption of insulation, heating upgrades, and renewables.
- Results:
Over 450,000 buildings improved under Clean Air, with annual CO₂ reductions exceeding 3 million tons. Monitoring systems track progress, though data centralization is still developing.
- Challenges:
Complex application procedures, limited budgets, and technical shortages. Social and regional disparities affect access, especially in rural areas.

5.3.5 Norway

- Impact:
Enova grants and green loans have supported both residential and commercial retrofits, with a focus on energy efficiency and flexibility. National statistics show declining energy use in buildings.
- Results:
Enova's project database and annual reports document uptake and indicative savings. Flexibility pilots have begun to demonstrate system-level benefits.
- Challenges:
Application complexity for homeowners and fragmented long-term monitoring. Reliance on consultants increases transaction costs.



5.3.6 Sweden

- Impact:
 - Tax reductions for green technologies and the ROT deduction have incentivized upgrades in single-family and multi-family dwellings. The tax reduction for green technologies is very popular and is estimated to have contributed to a significant increase in installations of renewable energy.
 - The subsidy for energy efficiency in electrically and gas-heated small residential buildings has supported heating system upgrades and building envelope measures.
 - Klimatklivet has supported large-scale investments in fossil-free solutions for businesses and public sector.
- Results:
 - Financial subsidies are evaluated at the end of each period
 - Since the start in 2015, as of 31 December 2025, a total of 31,595 applications had been approved and supported under the Klimatklivet programme, of which 1800 concerned energy conversion and 200 concerned energy efficiency measures. The expected yearly CO₂e-reduction from these applications amounts to about 430 and 190 kton, respectively.⁴
- Challenges:
 - Maintaining pace with ongoing technological advancements.
 - To design a support mechanism that is well-targeted, but not too complex.
 - High administrative costs.
 - Avoiding the risk of unintentionally incentivizing suboptimal solutions.
 - Uncertainties for the applicants.

5.3.7 Comparative Insights:

- Success Factors:

Well-designed, stable, and adequately funded incentives drive higher uptake and deeper renovations. Integration of monitoring and reporting mechanisms supports transparency and continuous improvement.
- Barriers:

Administrative complexity, frequent policy changes, and limited technical capacity are common challenges. Equity-focused schemes (e.g., income-tiered grants in Poland) improve access for vulnerable groups.

⁴ <https://www.naturvardsverket.se/amnesomraden/klimatomstallningen/klimatklivet/sa-fungerar-klimatklivet/resultat--hur-har-det-gatt-for-klimatklivet/?q=utv%C3%A4rdering%20av%20klimatklivet>



- Innovative Practices:
Market-based mechanisms (Italy, Poland), flexibility tariffs (Denmark, Sweden), and stakeholder networks (Sweden) enhance effectiveness and scalability.

5.4 Case Studies and Best Practices

This section highlights selected case studies and best practices from participating countries, illustrating successful approaches to retrofitting, energy efficiency, and incentive implementation. These examples demonstrate how targeted policies, innovative business models, and stakeholder engagement can drive impactful results and inform future strategies.

5.4.1 Denmark: Bundled Renovation Services and Flexible Tariffs

- Case Study:
The Danish “One-Stop-Shop” model for energy renovation offers homeowners a bundled package of services, including energy audits, financing advice, contractor coordination, and post-renovation monitoring. This approach simplifies the renovation process and increases uptake.
- Best Practice:
The introduction of time-of-use network tariffs (Tarifmodel 3.0) incentivizes flexible energy consumption, enabling households and businesses to reduce costs by shifting usage to off-peak hours. This supports grid stability and enhances the value of smart technologies.

5.4.2 Estonia: Prefabricated Renovation and Ventilation Upgrades

- Case Study:
Estonia’s pilot projects using prefabricated timber elements for apartment building renovations have demonstrated rapid installation, high energy savings, and improved indoor air quality. These projects are supported by national grants and technical guidance.
- Best Practice:
Mandatory ventilation upgrades as a condition for renovation grants ensure that energy efficiency improvements also deliver health and comfort benefits. The integration of quarter-hour electricity pricing supports active participation in flexibility markets.

5.4.3 Italy: Superbonus-Driven Deep Retrofits and Renewable Energy Communities

- Case Study:
The Superbonus scheme enabled deep energy and seismic retrofits in residential buildings, with tax deductions up to 110% (now stepping down). ENEA reports show



substantial increases in renovation activity, energy savings, and improved building resilience.

- **Best Practice:**
The regulatory framework for Renewable Energy Communities (CER) allows groups of users to share self-produced renewable energy and benefit from premium tariffs. This model promotes collective investment, flexibility, and social innovation.

5.4.4 Poland: Clean Air Program and Dynamic Demand Response

- **Case Study:**
The Clean Air Program has retrofitted over 450,000 buildings, focusing on replacing old heating systems and improving insulation. The program's tiered grants ensure access for low-income households, with significant reductions in CO₂ emissions and improved air quality.
- **Best Practice:**
Dynamic pricing and demand-side response (DSR) programs enable businesses to receive compensation for voluntary reductions in electricity consumption, supporting grid stability and integrating flexibility into the energy system.

5.4.5 Norway: Enova Pilots and Green Loans

- **Case Study:**
Enova's pilot programs support the adoption of advanced control systems, heat pumps, and envelop upgrades in both residential and commercial buildings. The public project database provides transparency and facilitates knowledge sharing.
- **Best Practice:**
Green loans offered by commercial banks (e.g., DNB, SpareBank 1) provide attractive financing for homeowners undertaking energy renovations, lowering barriers to entry and accelerating market uptake.

5.4.6 Sweden: Stakeholder Networks and Local Flexibility Markets

- **Case Studies:**
 - The Swedish Energy Agency's stakeholder networks (BeBo, BELOK, BeSmå, LÅGAN) regularly pilot new technologies, methods, and services, fostering collaboration among property owners, contractors, and trade associations. Innovation procurements and pilot projects have led to scalable solutions for energy efficiency.
 - Local flexibility markets, such as CoordiNet and Sthlmflex, have tested new market designs and communication standards, enabling DSOs and aggregators to manage grid congestion and optimize energy use.



5.4.7 Cross-Country Lessons:

- **Bundled Services and Advisory Support:**
Simplifying the renovation journey through bundled services and technical assistance increases participation and project success.
- **Equity-Focused Incentives:**
Tiered grants and targeted programs ensure access for vulnerable groups, maximizing social and environmental impact.
- **Integration of Flexibility:**
Incentives and market mechanisms that reward flexible energy use support system reliability and accelerate the transition to smart-grid-ready buildings.
- **Stakeholder Engagement:**
Ongoing dialogue, pilot projects, and innovation networks foster knowledge sharing and continuous improvement.



6 Impact

6.1 Energy Efficiency Improvements

The ENTRANCE project and its participating countries have made significant strides in improving energy efficiency in the building sector, driven by a combination of robust policy frameworks, targeted incentives, and innovative approaches. The following summarizes the main achievements and trends observed across Denmark, Estonia, Italy, Poland, Norway, and Sweden.

Denmark:

- National renovation strategies and incentive schemes have led to measurable reductions in heat consumption and overall energy use in buildings.
- The adoption of near-zero energy building standards and mandatory energy certificates has increased the rate and depth of energy renovations.
- Time-of-use tariffs have further optimized energy consumption patterns, supporting grid stability and reducing peak demand.

Estonia:

- National grants and prefabricated renovation solutions have resulted in substantial energy savings, particularly in multi-family apartment buildings.
- Improvements in ventilation and building envelopes have enhanced indoor air quality and reduced heating demand.
- The national building registry provides evidence of consistent progress toward energy efficiency targets.

Italy:

- Tax incentives (Ecobonus, Superbonus) have driven large-scale retrofits, resulting in significant reductions in energy consumption and greenhouse gas emissions.
- ENEA monitoring indicates hundreds of thousands of buildings have improved their energy performance, with notable gains in comfort and resilience.
- The integration of renewable energy systems and building automation has further amplified efficiency improvements.

Poland:

- The Clean Air and Stop Smog programs have enabled deep thermal modernization, especially for energy-poor households.
- Over 450,000 buildings have been retrofitted, with annual CO₂ reductions exceeding 3 million tons.
- Upgrades to insulation, heating systems, and renewable energy installations have contributed to improved air quality and lower energy bills.



Norway:

- Enova grants and green loans have supported both residential and commercial energy renovations, leading to declining final energy use in buildings.
- Flexibility pilots and advanced control systems have optimized energy use and enabled participation in ancillary service markets.
- National statistics confirm a downward trend in building energy demand.

Sweden:

- Tax reductions for green technologies and the ROT deduction have incentivized widespread adoption of energy-efficient solutions in single-family and multi-family dwellings.
- Klimatklivet has supported large-scale investments in fossil-free heating and energy systems for businesses and public sector entities.

Cross-Country Highlights

- All countries report measurable improvements in building energy performance, with reductions in heating and electricity demand, lower emissions, and enhanced comfort.
- The combination of regulatory standards, financial incentives, and market mechanisms has proven effective in accelerating the energy transition in the building sector.
- Monitoring and evaluation frameworks (e.g., national registries, project databases, annual reports) provide transparency and support continuous improvement.

Table 1 gives a summary of the country wise achieved results on energy efficiency by implementing the described incentives for energy efficiency.

Table 1. Energy Efficiency Achievements

Country	Programme/activity markers	Quantitative values	Sources/notes
Denmark	NZEB standards, EPCs, ToU tariffs	≥3%/yr public buildings renovation target; CO ₂ threshold 7.1 kg/m ² -yr	Policy frameworks
Estonia	Multi-family grants; ventilation upgrades; prefabricated elements	Major renovation defined by cost >25% of new build	National roadmap & EPBD
Italy	Ecobonus/Superbonus-driven retrofits; automation; RES integration	500,651 buildings; €123.42bn investments; 651 GWh/yr (boilers); 528 GWh/yr (windows); 186.7 GWh/yr (roof insulation)	ENEA 2025 & Ecobonus 2023 breakdown



Poland	Clean Air, Stop Smog, Warm Apartment; PV & heat-pump programmes	453,006 buildings improved: 7,598,322 GJ/yr energy reduction	Programme portfolio 2019–2024
Norway	Enova grants; green loans; flexibility pilots	58 projects; NOK 0.48bn; 13.81 kt CO ₂ /yr (selected); 1,096 projects; NOK 0.11bn	Enova DB snapshots (2024)
Sweden	Tax reductions	12-15% using hourly/quarterly tariffs ⁵ Subsidy for Electrically or Gas-heated Houses: 633MSEK (2023-2026) ⁶ Green technology tax deduction: 16.6BSEK (2021-2025; 48BSEK private investments)	Swedish Energy Agency, Boverket, Skatteverket, SCB

Conclusion:

The collective impact of these energy efficiency improvements is substantial, contributing directly to the EU's climate and energy goals. Continued investment in deep renovations, innovative technologies, and inclusive incentive schemes will be essential for sustaining progress and achieving long-term targets.

6.2 Emissions Reduction

This section synthesizes emissions-related outcomes reported by national sources and programmes in the participating countries. The ENTRANCE project has not yet produced specific quantified impacts; rather, ENTRANCE aggregates and compares external evidence to inform future demonstration and exploitation activities.

Denmark:

- The national renovation strategy and NZEB standards have led to substantial reductions in building-related GHG emissions.
- The integration of advanced control systems and flexible tariffs has enabled further decarbonization by optimizing energy use and supporting the uptake of renewables.

⁵ Fördelning av elavtal, andel (procent) efter elområde, avtalstyp och månad. PxWeb

⁶ Bidrag för energieffektivisering i småhus 2026-04-01



- Denmark's Climate Act sets a binding target of a 70% reduction in GHG emissions by 2030, with the building sector playing a pivotal role.

Estonia:

- Renovation grants and prefabricated solutions have resulted in measurable decreases in heating demand and associated emissions, particularly in multi-family buildings.
- The transition to zero-emission buildings, as mandated by the EPBD, is accelerating progress toward national climate targets.

Italy:

- Large-scale retrofits supported by Ecobonus and Superbonus have delivered major reductions in energy consumption and GHG emissions.
- ENEA reports indicate millions of tons of CO₂ avoided annually due to improved building performance and the integration of renewable energy systems.
- The promotion of Renewable Energy Communities (CER) further supports emissions reduction by enabling collective self-consumption of clean energy.

Poland:

- The Clean Air and Stop Smog programs have achieved significant emissions reductions, with over 3 million tons of CO₂ avoided annually (2019–2024).
- Upgrades to heating systems, insulation, and renewable energy installations have improved air quality and reduced reliance on fossil fuels.
- Dynamic pricing and demand-side response programs support further decarbonization by enabling flexible energy use.

Norway:

- Enova grants and green loans have facilitated the adoption of low-carbon technologies, contributing to a steady decline in building-related emissions.
- Flexibility pilots and participation in ancillary service markets have enhanced the integration of renewables and reduced peak emissions.
- National statistics confirm a downward trend in GHG emissions from the building sector.

Sweden:

- Tax reductions for green technologies and the ROT deduction have incentivized the installation of solar PV, heat pumps, and energy storage.
- The subsidy for energy efficiency in electrically and gas-heated small residential buildings has supported heating system upgrades and building envelope measures.
- Klimatklivet has supported investments in fossil-free heating and energy systems for businesses and public sector entities.

Cross-Country Highlights



- All countries report measurable reductions in building-related GHG emissions, with the most significant impacts observed in Italy and Poland due to large-scale retrofit programs.
- The combination of regulatory standards, financial incentives, and market mechanisms has proven effective in accelerating decarbonization in the building sector.
- The integration of renewable energy sources and flexible energy management systems is amplifying emissions reduction across the region.

Table 2 gives a summary of the country wise achieved results on emission reduction by implementing the described incentives for energy efficiency.

Table 2. Emissions Reduction Achievements

Country	Indicative Annual CO ₂ Reduction	Quantitative programme markers	Notes/ Source markers
Denmark	Sectoral contribution (qualitative)	NZEB-aligned BR18; ≥3%/year renovation target for public buildings; CO ₂ threshold 7.1 kg/m ² ·yr (from Jul 2025)	Codes & targets
Estonia	Registry-based reductions (qualitative)	Major renovation threshold: cost >25% of new-build cost; transition to zero-emission buildings	National registry & EPBD
Italy	Millions of tons (national reports)	500,651 buildings retrofitted; €123.42bn total investments (to Aug 2025)	ENEA annual reports
Poland	>3,000,000 t CO ₂ /year (2019–2024)	453,006 buildings improved: 7,598,322 GJ/year energy reduction	Clean Air portfolio stats
Norway	Steady decline (national statistics)	58 projects; NOK 0.48bn; 13.81 kt CO ₂ /yr (selected Enova programme); 1,096 projects; NOK 0.11bn (energy analyses)	Enova project DB & NVE
Sweden	Growing, evaluated per period		Swedish Energy Agency & Boverket



Conclusion:

Across all six ENTRANCE partner countries, building-related greenhouse gas emissions are on a clear downward trend. This progress is driven by a mix of regulatory standards, targeted financial incentives, and market-based mechanisms.

Poland reports the largest quantified annual impact, with more than 3 million tonnes of CO₂ avoided per year between 2019 and 2024 through the “Clean Air” programme and related schemes.

In Italy, tax-based initiatives such as the Ecobonus and Superbonus enabled 500,651 building retrofits by August 2025. These programmes mobilised €123.42 billion in investment, resulting in significant reductions in energy consumption and associated CO₂ emissions.

Denmark supports decarbonisation through NZEB-aligned building codes and flexibility tariffs. Estonia reduces heating demand and emissions via grants for multi-family retrofits and a strong focus on zero-emission solutions. In Norway, Enova’s funding portfolio and pilot projects contribute to a steady emissions decline. Sweden accelerates the uptake of low-carbon technologies through tax reductions and the Klimatklivet programme, reinforced by nationwide smart metering and flexible tariffs.

To sustain and amplify these gains, partner countries should expand retrofit ambitions to cover building envelopes, technical systems, and control solutions; combine energy efficiency with on-site renewables and flexibility measures; and strengthen long-term monitoring to demonstrate lasting energy and emissions savings.

6.3 Market and Societal Impact

Findings below reflect market and societal signals from national schemes and pilots. ENTRANCE currently contributes by mapping incentives, barriers and business case enablers; quantified impacts from ENTRANCE pilots will be reported in later WPs.

Market Impact:

- **Stimulation of Retrofit and Energy Services Markets:**
Incentive schemes have catalyzed demand for energy renovation services, driving growth in construction, technology, and consultancy sectors. In Italy and Poland, large-scale programs have mobilized billions of euros in private and public investment, supporting thousands of jobs and fostering innovation in building technologies.
- **Business Model Innovation:**
The emergence of bundled renovation services (Denmark), one-stop-shop models, and Renewable Energy Communities (Italy) has transformed traditional market structures, enabling new business models and value chains. Flexibility markets and demand-side response programs (Poland, Sweden, Norway) have created opportunities for aggregators, technology providers, and energy service companies.



- **Financial Sector Engagement:**
Green loans and tax incentives (Norway, Sweden) have increased the involvement of financial institutions, making energy renovations more accessible and affordable for homeowners and businesses.
- **Regional and Local Economic Development:**
Regional incentives and co-financing schemes (Italy, Sweden, Estonia) have supported local economies, particularly in areas with older building stock or lower investment capacity.

Societal Impact:

- **Improved Comfort, Health, and Well-being:**
Deep retrofits and ventilation upgrades (Estonia, Denmark, Poland) have enhanced indoor air quality, thermal comfort, and occupant health, especially in multi-family and energy-poor households.
- **Social Equity and Inclusion:**
Tiered grants and targeted programs (Poland, Italy) have increased access to energy efficiency measures for vulnerable groups, reducing energy poverty and supporting social cohesion.
- **Empowerment and Engagement:**
Stakeholder networks (Sweden), community-driven projects (Italy), and advisory services (Denmark, Norway) have empowered building owners, occupants, and local communities to participate actively in the energy transition.
- **Awareness and Behavioral Change:**
Mandatory energy certificates, public reporting, and educational campaigns have raised awareness of energy efficiency benefits, encouraging behavioral change and long-term commitment to sustainability.
- **Resilience and Climate Adaptation:**
Building upgrades and integration of renewable energy systems have increased resilience to climate-related risks, supporting adaptation to changing weather patterns and energy market volatility.

Table 3 gives a summary of the country wise achieved results on the market and societal impacts by implementing the described incentives for energy efficiency.

Table 3. Market and Societal Impact Highlights

Country	Market impact (quantitative markers)	Societal impact (quantitative/qualitative)	Notable instruments
Denmark	Tarifmodel 3.0 roll-out; ≥3%/yr renovation target (public)	Awareness via EPCs; improved comfort (qualitative)	Bygningspuljen, Varmepumpepuljen, Erhvervspuljen



Estonia	Apartment renovation grants; major-renovation cost threshold (>25%)	Indoor air quality improvements (peer-reviewed evidence)	National grants; ventilation requirements
Italy	500,651 buildings retrofitted; €123.42bn investments (to Aug 2025)	Community empowerment via CER; deep retrofit comfort gains	Ecobonus, Superbonus, White Certificates, Conto Termico, CER
Poland	453,006 buildings improved; 7.6 million GJ/yr final energy reduction	Energy poverty reduction via tiered grants; air-quality gains	Clean Air, Stop Smog, Renovation Bonus, Tax relief, DSR, Dynamic pricing
Norway	Enova programmes: 58 projects; NOK 0.48bn; 13.81 kt CO ₂ /yr (selected); 1,096 projects; NOK 0.11bn	User support via pilots/advisory; resilience improvements	Enova, SkatteFUNN, Innovation Norway, Green loans
Sweden	100% smart meters; ~14% hourly/quarterly tariffs; ROT 30–50%; tax reductions 15%/48.5%	Stakeholder networks (BeBo/BELOK/BeSmå/LÅGAN) ; behavioural change	Klimatklivet, ROT, Green tech tax reductions

Conclusion:

National incentive portfolios are stimulating retrofit demand, new business models, and market participation across the value chain. One-stop-shop renovation services (Denmark), Renewable Energy Communities (Italy), and flexibility/DSR mechanisms (Poland, Sweden, Norway) create investable pathways for owners, ESCOs and aggregators. Financial sector engagement via green loans (Norway) and tax instruments (Sweden/Italy) lowers entry barriers. Societally, programmes reduce energy poverty (Poland), improve indoor air quality and comfort (Estonia/Denmark/Poland), and empower stakeholders through networks (Sweden). To maximise market depth and societal value, simplify customer journeys, expand advisory and bundled services, prioritize equity-focused funding, and scale flexibility-enabling tariffs and local markets.



7 Budget

This section provides an overview of the financial resources allocated to energy efficiency and retrofitting incentives across the ENTRANCE partner countries. It summarizes funding sources, investment volumes, and cost-benefit considerations, drawing on national program data, official reports, and project questionnaires.

7.1 Funding Sources

- **National Government Budgets:**
Most countries allocate substantial public funds to support energy renovation programs, with annual or multi-year budgets set by ministries of energy, environment, or housing.
- **EU Funding:**
European Structural and Investment Funds, Horizon Europe, and other EU programs co-finance national and regional initiatives, especially in countries with lower investment capacity.
- **Regional and Local Budgets:**
Regional authorities and municipalities supplement national schemes with local grants, co-financing, and pilot project funding (notably in Italy, Sweden, Estonia).
- **Private Investment:**
Tax incentives, green loans, and market mechanisms mobilize private capital, encouraging homeowners, businesses, and ESCOs to invest in energy upgrades.
- **Specialized Funds:**
Dedicated climate and energy funds (e.g., Enova in Norway, Klimatklivet in Sweden) provide targeted support for innovation, flexibility, and deep retrofits.



7.2 Investment Volumes by Country

Table 4 gives a summary of the investment volume in energy efficiency by the countries in the ENTRANCE project. Please note that the figures given in Table 4 are indicative and based on available program data and official reports. Actual investment volumes may vary year-to-year and by program.

Table 4. Investment volumes in energy efficiency by country in the ENTRNACE project

Country	Estimated Annual Public Funding	Notable Programs & Investment Volumes	EU/Regional Co-financing	Private Investment Mobilized
Denmark	€100–200 million	Bygningspuljen, Varmepumpepuljen, Erhvervspuljen	Yes	Moderate (via tariffs, loans)
Estonia	€50–100 million	National renovation grants, local pilots	Yes	Moderate
Italy	€2–5 billion	Ecobonus, Superbonus, Conto Termico, CER	Yes	High (billions via tax credits)
Poland	€500 million–€1 billion	Clean Air, Stop Smog, Renovation Bonus	Yes	High (tax relief, PV/heat pump)
Norway	€200–400 million	Enova grants, SkatteFUNN, Innovation Norway	Yes	Moderate (green loans)
Sweden	€300–600 million	Klimatklivet, ROT deduction, tax reductions	Yes	High (tax incentives, SME support)

7.3 Cost-Benefit Analysis

This section summarizes cost–benefit patterns observed across ENTRANCE countries based on reported programme data and referenced literature.

- Return on Investment (ROI):
Deep retrofits and bundled measures typically yield higher energy and emissions



- savings per euro invested, with payback periods ranging from 5 to 15 years depending on building type and local energy prices.
- **Leverage Effect:**
Tax incentives and grants often mobilize 2–5 times their value in private investment, especially in Italy, Poland, and Sweden.
 - **Societal Benefits:**
In addition to direct energy and emissions savings, investments deliver health, comfort, and productivity gains, reduce energy poverty, and support local job creation.
 - **Administrative Costs:**
High administrative complexity can reduce cost-effectiveness; streamlined application processes and digital platforms improve efficiency and uptake.

7.4 Budgetary Challenges and Recommendations

The following challenges/recommendations synthesize cross-country insights from the six participating ENTRANCE countries.

- **Sustainability of Funding:**
Ensuring stable, multi-year funding is critical for long-term planning and market confidence.
- **Equity and Accessibility:**
Dedicated budgets for energy-poor households and vulnerable groups enhance social impact and ensure inclusive access.
- **Integration with EU and Private Funds:**
Leveraging EU co-financing and private capital maximizes the reach and effectiveness of national programs.
- **Monitoring and Transparency:**
Robust tracking of investment flows and outcomes supports continuous improvement and accountability.

The financial commitment of ENTRANCE partners and their governments underpin the success of energy efficiency and retrofitting initiatives. Continued investment, innovative financing models, and effective cost-benefit strategies will be essential for scaling up impact and achieving EU climate and energy goals.



8 Conclusion

The D7.1 Status Report for the ENTRANCE project provides a comprehensive overview of the current landscape of incentives, policies, and market mechanisms supporting energy efficiency and retrofitting in the European building sector. Drawing on detailed national analyses, cross-country comparisons, and best practice case studies, the report highlights both the achievements and ongoing challenges faced by Denmark, Estonia, Italy, Poland, Norway, Sweden, and their partners.

8.1 Key Findings:

- **Robust Policy Frameworks:** All participating countries have established ambitious national strategies and regulatory frameworks aligned with EU directives, driving progress toward energy efficiency and decarbonization targets.
- **Diverse and Inclusive Incentive Schemes:** A wide range of financial instruments—including grants, tax deductions, market-based mechanisms, and regional co-financing—support homeowners, businesses, public institutions, and, in several cases, energy-poor households.
- **Measurable Impact:** Incentive programs have led to significant improvements in building energy performance, reductions in greenhouse gas emissions, and enhanced comfort and health for occupants. Large-scale investments have stimulated market growth and innovation.
- **Barriers Remain:** Administrative complexity, frequent regulatory changes, limited technical capacity, and social disparities continue to challenge the effectiveness and accessibility of incentive schemes.
- **Best Practices and Innovation:** Bundled renovation services, stakeholder networks, flexibility markets, and equity-focused programs have demonstrated strong potential for replication and scaling.

8.2 Recommendations:

- **Simplify Access and Administration:** Streamlining application processes and reducing bureaucratic hurdles will improve uptake and cost-effectiveness.
- **Enhance Technical Support and Advisory Services:** Providing guidance and bundled services can empower building owners and accelerate deep renovations.
- **Promote Stable and Predictable Policy Environments:** Consistent regulations and long-term funding commitments are essential for market confidence and sustained progress.
- **Strengthen Monitoring and Evaluation:** Robust data collection and transparent reporting will support continuous improvement and evidence-based policymaking.
- **Foster Equity and Inclusion:** Targeted support for vulnerable groups and energy-poor households will maximize social impact and ensure a just transition.



- Integrate Flexibility and Smart Technologies: Incentives and market mechanisms that reward flexible energy use and smart-grid readiness will future-proof buildings and support system reliability.

8.3 Future Outlook

The ENTRANCE project and its partners are well-positioned to contribute to the EU's climate and energy objectives by leveraging best practices, addressing identified barriers, and fostering collaboration across sectors and regions. Continued innovation, investment, and stakeholder engagement will be critical to scaling up impact and achieving a sustainable, decarbonized built environment.



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 - T7.1 Questionnaire Italy
 - T7.1 Questionnaire Poland
 - T7.1 Questionnaire Sweden
 - T7.1 Questionnaire Norway



10 Full Questionnaire Template

Questionnaire for Task 7.1: Access to Incentives for Retrofitting and Energy-Efficiency Measures

Dear Entrance project Partner,

As part of the preparation for the D7.1 report, we kindly ask you to provide country specific information regarding retrofitting incentives, energy-efficiency measures, and related policies. Please complete the following questionnaire to help us compile a comprehensive analysis.

Section 1: General Information

1. Country Name:
2. Organization Name:
3. Contact Person
4. Email:

Section 2: National Policies

4. Please list and briefly describe the main national policies related to retrofitting and energy-efficiency in buildings.
5. Are there any recent policy changes or updates in this area? If yes, please describe.

Section 3: Available Incentives

6. What types of incentives are available in your country for retrofitting and energy-efficiency improvements? (e.g., tax credits, subsidies, grants)
7. Who are the target beneficiaries of these incentives? (e.g., homeowners, businesses, public institutions)
8. Are there regional or local incentives in addition to national ones? Please provide details.

Section 4: Effectiveness and Data

9. Based on available data, how effective have these incentives been in promoting retrofitting and energy efficiency?
10. Please provide any relevant statistics or case studies from your country or region.
11. Are there any monitoring or evaluation mechanisms in place to assess the impact of these incentives?

Section 5: Barriers and Recommendations

12. What are the main barriers to accessing or implementing these incentives?



13. What suggestions do you have for improving the effectiveness or accessibility of these incentives?

14. Are there any innovative approaches or pilot programs in your country that could serve as best practices?

Section 6: Energy flexibility and demand response

15. Please list and briefly describe the main national policies, regulations, or market mechanisms related to energy flexibility and demand response, in general and particularly in the built environment.

16. Are there any national or regional flexibility markets in your country?

17. Who are the main stakeholders/actors involved (aggregators, utilities, DSOs, TSOs, technology providers)?

18. Are there pilot projects, regional programs, or innovative tariffs in your country supporting energy flexibility?

19. What types of incentives are available for buildings to participate in demand response or flexibility programs?

20. What are the main barriers to wider demand response or flexibility programs (regulatory, technological, societal)?



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